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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

SEP 28 1992

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of)
)
Amendment of Section)
73.682(a)(21)(iv) of the)
Commission's Rules To)
Permit The Transmission of)
Ghost Canceling Reference)
Signals on Line 19 of NTSC)
Color Television Transmissions)

RM - 8067

COMMENTS OF MSTV

The Association for Maximum Service Television, Inc. ("MSTV") hereby files these comments in support of the United States Advanced Television Systems Committee's ("ATSC") above-referenced petition for rule making which was filed on August 14, 1992.

ATSC's petition asks that the Commission amend Section 73.682(a)(21)(iv) of the Commission's Rules to restrict the kind of signal that may be placed on line 19 of the vertical blanking interval of NTSC television transmissions to the ghost canceling reference signal ("GCR signal") proposed by Philips Laboratories and standardized by ATSC ("ATSC GCR signal"). Presently, Section 73.682(a)(21)(iv) reserves line 19 for the transmission of a vertical interval reference signal ("VIR signal").

MSTV wholeheartedly supports ATSC's petition. As the petition notes, a Commission rule restricting the use of line 19 to the broadcasting of the ATSC GCR signal would

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encourage all segments of the broadcasting industry to bring an effective and inexpensive ghost canceling service to the viewing public at the earliest possible date.

For terrestrial broadcasters, the major impediment to delivering unimpaired pictures to the viewing audience is multipath, better known as "ghosting." The ghosting phenomenon is the result of the broadcaster's signal taking multiple paths from transmitter to receiver. Depending on path length differences, images on a viewer's screen can appear at more than one location.

Over the last several years, MSTV has worked with ATSC and other entities concerned with broadcast quality to find the most effective means of reducing the ghosting problem. In May 1989, ATSC established a specialist group on ghost cancellation ("Specialist Group") charged with achieving agreement on the best technology to reduce ghosting. A representative of MSTV was one of thirteen persons initially comprising the Specialist Group. The Specialist Group developed procedures for field testing ghost cancellation systems. The MSTV representative on the Specialist Group prepared the first draft of these procedures and chaired a task force that further refined them.

The first opportunity for most broadcasters to witness the effect of ghost cancellation on an actual broadcast signal was presented at the 1990 National Association of Broadcasters Convention in Atlanta, Georgia.

The Broadcast Technology Association (BTA) of Japan and several Japanese manufacturers of television equipment made available the equipment necessary to demonstrate the ghost cancellation system that had been developed by Nippon Hoso Kyokai and BTA. MSTV and NAB jointly sponsored the first field test of the system to assess the over-the-air performance of this new technology.^{1/}

In the fall of 1991, MSTV, NAB, Cable Television Laboratories, the Electronics Industries Association, and the Public Broadcasting Service sponsored field testing in the Washington, D.C. area of GCR signals proposed by AT&T/Zenith, BTA, David Sarnoff Research Center/Thomson Consumer Electronics, Philips Laboratories, and Samsung Electronics. MSTV conducted the data analysis for these field tests using approximately 3,200 separate data points from observations on television stations using channels 4, 20, and 50. The field test results showed that the signal proposed by Philips Laboratories consistently outperformed the other four signals.^{2/}

^{1/} See generally Victor Tawil and Lynn D. Claudy, Field Testing of a Ghost Canceling System for NTSC Television Broadcasting Service, IEEE Transactions on Broadcasting, December 1990.

^{2/} Victor Tawil and Lynn D. Claudy, Performance of Television Ghost Canceling Systems under Field Test Conditions, IEEE Transactions on Consumer Electronics, August 1992. See also NAB/MSTV, Field Tests of Ghost Canceling Systems for NTSC Television Broadcasting, January 31, 1992; Lynn D. Claudy and Victor Tawil, Results of Field Tests of Ghost Canceling Systems for NTSC Television Broadcasting,
(continued...)

Following these field tests, ATSC's Technology Group on Distribution ("Technology Group") appointed a special task force on ghost cancellation ("Task Force") that conducted additional tests. An MSTV representative served on the Task Force. Moreover, in connection with the Task Force's work, MSTV provided financial support for further testing and conducted a data analysis. After the additional field and laboratory tests were conducted,^{3/} the Task Force reported to the Technology Group its unanimous conclusion that Philips Laboratories's GCR signal offered the best solution to the ghosting problem.

On June 25, 1992, the Technology Group recommended that the GCR signal proposed by Philips Laboratories be adopted as a voluntary standard for United States television broadcasters. On August 13, 1992, the full ATSC membership voted to approve this recommendation. Thus, the ATSC GCR signal was established as the voluntary technical standard for a GCR signal.

MSTV believes that the public interest would be served best by a new Commission rule restricting the use of line 19 to the broadcast of the ATSC GCR signal. ATSC's

^{2/}(...continued)

Proceedings of the 1992 NAB Broadcast Engineering Conference, April 1992.

^{3/} See generally NAB/MSTV, Laboratory and Field Tests of Philips, Sarnoff/Thomson and Hybrid Philips/Sarnoff/Thomson Ghost Canceling Systems for NTSC Television Broadcasting, June 18, 1992.

petition correctly points out that there is no compelling reason for the Commission to continue to restrict the use of line 19 to the transmission of the VIR signal. As the petition notes, VIR signal circuitry never was implemented widely by the television manufacturing industry, and no manufacturer has installed VIR signal circuitry in its products since 1985. As the petition also notes, line 19 represents the optimal location for the ATSC GCR signal since it is the only line that passes unencumbered through the entire broadcast chain.

Extensive field and laboratory testing has proven the ATSC GCR signal to be currently the best solution to the ghosting problem. In order to speed the availability of ghost canceling technology to the viewing public, the Commission should establish a rule restricting the use of line 19 to the broadcasting of the ATSC GCR signal.

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Respectfully submitted,

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September 28, 1992

CERTIFICATE OF SERVICE

I, Lesa Hall, hereby certify that on this 28th day of September 1992 I caused the foregoing Comments of MSTV to be hand-delivered to the following party:

United States Advanced Television
Systems Committee
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